Serum Sex Hormone Levels Are Related to Breast Cancer Risk in Postmenopausal Women

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Abstract: We conducted a nested case-control study to prospectively evaluate the relationship of serum estrogens and androgens to risk of breast cancer in postmenopausal women. From 1977 to 1987, 3375 postmenopausal women free of cancer and not taking replacement estrogens donated blood to the Breast Cancer Serum Bank in Columbia, Missouri. Of these, 72 were subsequently diagnosed with breast cancer. For each case, two controls matched on age and date and time of day of blood collection were selected using incidence density matching. The median age of subjects at blood collection was 62 years; the time from blood collection to diagnosis ranged from less than 1 to 9.5 years with a median of 2.9 years. Risk of breast cancer was positively and significantly associated with serum levels of estrogens and androgens. Compared to women in the lowest quartile, those in the highest quartile for non-sex hormone-binding globulin (non-SHBG) bound (bioavailable) estradiol had a relative risk of 5.2 (95% confidence interval [Cl) = 1.5-18.5) and those in the highest quartile for testosterone had a relative risk of 6.2 (95% Cl = 2.0-19.0). Our results lend considerable support to the hypothesis that serum concentrations of estrogens and androgens are related to the subsequent diagnosis of breast cancer in postmenopausal women.